

WE CLAIM:

1. A temporary filter device comprising:
  - an elongate proximal guidewire shaft having a distal end;
  - a relatively short distal guidewire shaft having a proximal end and being disposed distal to and coaxially aligned with the proximal shaft;
  - a generally tubular filter mounted coaxially about the proximal and distal guidewire shafts, the filter having a tapered distal end fixed adjacent the proximal end of the distal shaft and a tapered proximal end fixed adjacent the distal end of the proximal shaft, wherein relative longitudinal movement between the distal and proximal ends of the filter accompanies a transformation of the filter between a collapsed configuration and an open configuration;
  - an actuator slidably disposed along the proximal guidewire shaft; and
  - at least one link slidably disposed through at least one opening near the filter proximal end and connecting the actuator to the distal end of the filter.
2. The temporary filter device of claim 1 wherein the at least one link includes a tubular distal segment slidably disposed about the distal end of the proximal guidewire shaft, the tubular distal segment being disposed within the filter.
3. The temporary filter device of claim 1 wherein the distal end of the proximal guidewire shaft is reduced in diameter.
4. The temporary filter device of claim 1 wherein the proximal end of the filter is fixed about the proximal guidewire shaft by a joint having the at least one opening there through.
5. The temporary filter device of claim 1 wherein a flexible tubular element is fixed about the distal guidewire shaft.

6. The temporary filter device of claim 1 wherein the actuator is an elongate tube.

7. The temporary filter device of claim 1 wherein the actuator is a relatively short tube or ring.

8. The temporary filter device of claim 7 further comprising an elongate hollow rod slidably disposed along the proximal guidewire shaft, the rod having a distal end engageable with the actuator.

9. The temporary filter device of claim 7 further comprising a coiled compression spring disposed around the proximal guidewire shaft between the actuator and the proximal end of the filter to assist in the transformation of the filter to the open configuration.

10. A temporary filter device comprising:

an elongate proximal core wire having a distal end;

a distal core wire having a proximal portion, the distal core wire being disposed distal to and coaxially aligned with the proximal core wire;

a tubular segment having a distal end, the tubular segment being fixedly disposed about the distal end of the proximal core wire and extending distally there from to slidably engage the proximal portion of the distal core wire;

a generally tubular filter mounted about the distal core wire and the tubular segment, the filter having a tapered distal end fixed to the distal core wire and a tapered proximal end fixed to the tubular segment, wherein relative longitudinal movement between the distal and proximal ends of the filter accompanies a transformation of the filter between a collapsed configuration and an open configuration;

an actuator slidably disposed along the proximal core wire proximally of the filter; and

a link slidably disposed through an opening near the filter proximal end and connecting the actuator to the distal end of the filter.

11. The temporary filter device of claim 10 wherein the distal end of the proximal core wire is reduced in diameter.
12. The temporary filter device of claim 10 wherein the proximal end of the filter is fixed about the tubular segment by a joint having the opening there through.
13. The temporary filter device of claim 10 wherein a flexible tubular element is fixed about the distal core wire.
14. The temporary filter device of claim 10 wherein the actuator is an elongate tube.
15. The temporary filter device of claim 10 wherein the actuator is a relatively short tube or ring.
16. The temporary filter device of claim 15 further comprising an elongate hollow rod slidably disposed along the proximal core wire, the hollow rod having a distal end engageable with the actuator.
17. The temporary filter device of claim 16 further comprising a coiled compression spring disposed around the proximal core wire between the actuator and the proximal end of the filter to assist in the transformation of the filter to the open configuration.

18. A device for temporarily filtering bodily fluid, the device comprising:  
an elongate flexible guidewire having a proximal end and distal region having a  
flexible tubular element fixed there about;

a generally tubular, self-expanding filter mounted coaxially about the guidewire,  
the filter having distal and proximal tapered ends slidably disposed about the guidewire,  
wherein relative longitudinal movement between the distal and proximal ends of the filter  
accompanies a transformation of the filter between a closed configuration and an open  
configuration;

a stop element fixed to the guidewire distal region, the stop element being  
disposed between and limiting longitudinal movement of the distal and proximal ends of  
the filter;

an actuator fixed to the proximal end of the filter, the actuator forming an annular  
space around the guidewire and being slidably disposed there along;

an elongate hollow rod having a lumen and a distal end releasably engageable  
with the actuator, the hollow rod being slidably disposed about the guidewire and being  
operable, when the distal end of the rod is engaged with the actuator, to draw the  
proximal end of the filter in a proximal direction; and

a mechanism for damping the relative longitudinal movement between the distal  
and proximal ends of the filter.

19. The device of claim 18 wherein the annular space is capable of containing  
a volume of bodily fluid to effectuate the mechanism for damping.

20. The device of claim 18 wherein the mechanism for damping comprises a  
viscous material being applied to the actuator and/or the guidewire to at least partially fill  
the annular space there between.

21. The device of claim 18 wherein the mechanism for damping comprises a  
distal opening of the actuator being funnel-shaped such that distal movement of the  
actuator through bodily fluid collects and forces the fluid into the annular space.

22. The device of claim 18 wherein the mechanism for damping further comprises the actuator and the distal end of the hollow rod being designed and arranged such that the releasable engagement there between is effectuated by applying a partial vacuum through the lumen of the hollow rod, whereby controllably releasing the partial vacuum slowly disengages the distal end of the hollow rod from the tubular actuator.